Catalyst 3000 Series

Product Overview

The Catalyst 3000 series provides a stackable switching architecture that delivers Layer 2 and Layer 3, stackable software and VLAN switching for growing workgroup applications. The Catalyst 3000 series allows you to deploy switches in a variety of applications and protect your investment. Greater switching capacity or multilayer traffic management functions can be added through a flexible, cost-effective, stackable architecture.

The following key elements make up the Catalyst 3000 series:

- Catalyst 3000 switch—a stackable switch with 16 10BaseT Ethernet ports, one AUI port, plus two slots for expansion modules. A console port supports operator input, a monitoring port provides mirroring of port data to an external port, and an I/O Stack Port enables connection to the stack.
- Catalyst 3100 switch—a flexible switch with 24 dedicated 10BaseT ports plus one FlexSlot for use with the 3011 WAN access module or one Catalyst 3000 expansion module.
- Catalyst 3200 switch—a modular chassis that has seven expansion slots including one FlexSlot. Stackable with other Catalyst 3200, Catalyst 3100, or Catalyst 3000 switches, the Catalyst 3200 can be configured with a wide variety of the Catalyst 3000 series expansion modules (up to seven) including a router/WAN module in the Catalyst 3200 FlexSlot. Redundant load-sharing power supplies are standard.
- Catalyst 3000 series expansion modules—modules that include mixtures of 1-port 100BaseTX, 2-port 100BaseTX with Inter-Switch Link (ISL), 3-port 10BaseFL, 1-port 100BaseFX, 2-port 100BaseFX with ISL, 4-port 10BaseT, 3-port 10BaseZ, 2-port 100VG (fiber and UTP), and 1-port ATM fiber modules (MMF and SMF). A 2-port WAN module is available for the Catalyst 3100 and Catalyst 3200 only. The WAN module can only be used in the FlexSlot.
- Catalyst Matrix—an 8-port crosspoint matrix switch used to connect from three to eight Catalyst 3000, Catalyst 3100, or Catalyst 3200 switches to create a single-stack entity. The Catalyst Matrix provides 3.84 Gbps of bandwidth for switch-to-switch connectivity. The Matrix has the option of installing a fully redundant module, which includes both logic and a power supply providing truly fault-tolerant switching.

The Catalyst 3000 series delivers media-rate switching. Its internal switching module interfaces allow you to add optional Fast Ethernet, 100VG-AnyLAN, or ATM interfaces that connect to high-speed servers, other switched 100-Mbps LANs, or ATM networks.

The Catalyst 3000 workgroup stack software architecture allows easy-to-use and manage stacked switching. Catalyst 3000, Catalyst 3100, and Catalyst 3200 switches can be interconnected, back-to-back, via a common switching matrix. Three to eight switches can be interconnected with the addition of a stack port module in each switch.

The stacking software is a distributed architecture that provides network resilience and supports automatic switch reconfiguration in addition to offering additional features to monitor and control switched network traffic.

Figure 6-12: Catalyst 3000 Switch Front View

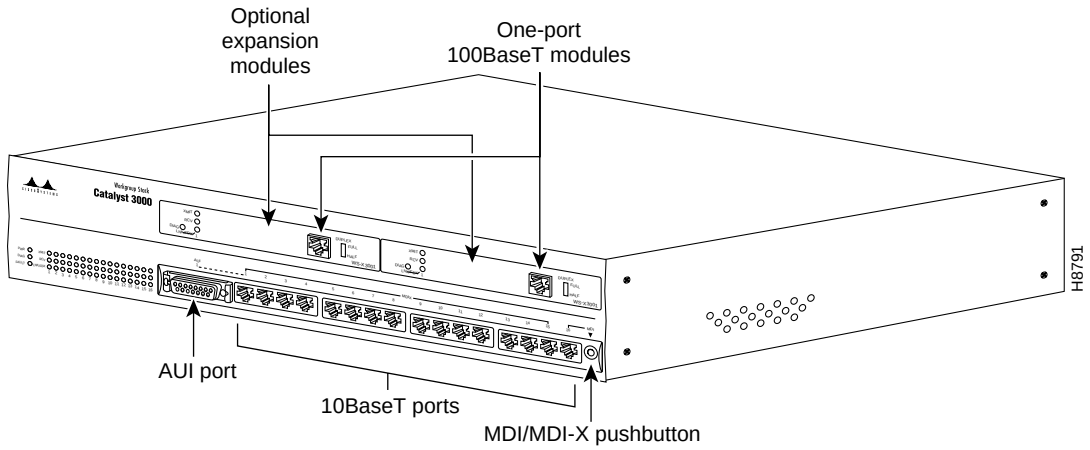


Figure 6-13: Catalyst 3000 Switch Rear View

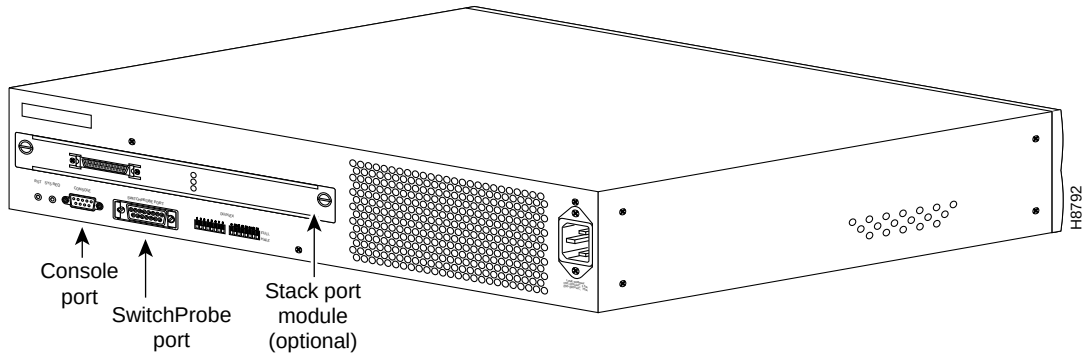


Figure 6-14: Catalyst 3100 Switch Front View

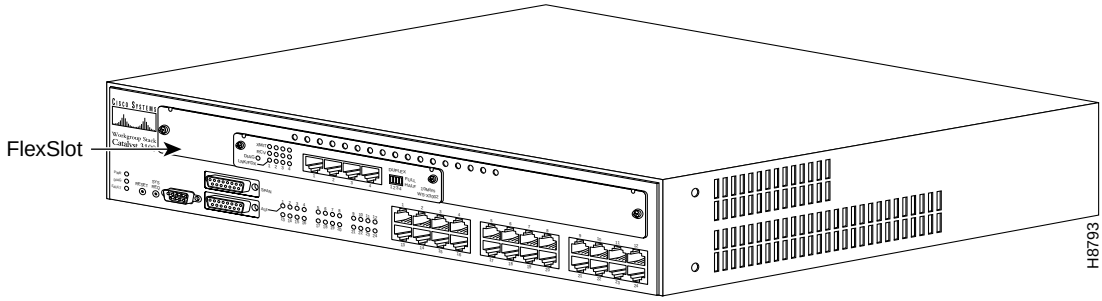


Figure 6-15: Catalyst 3200 Switch Front View

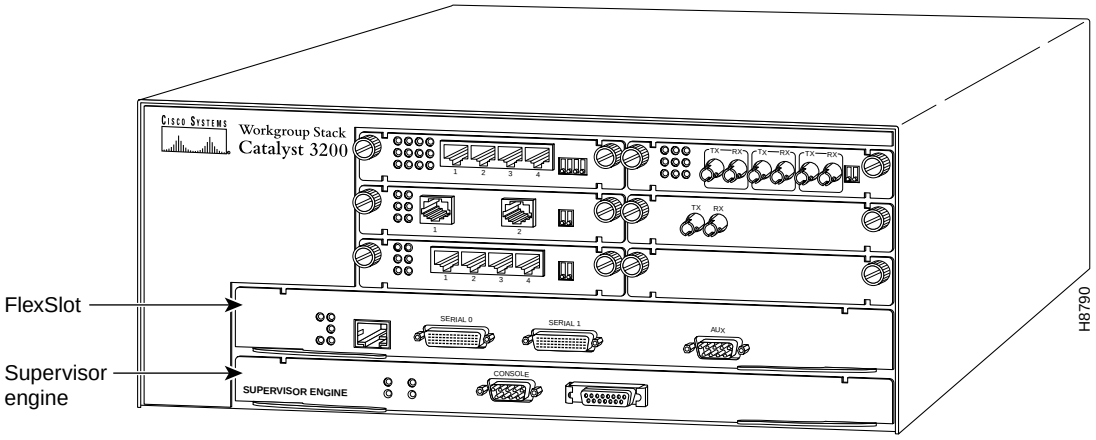


Figure 6-16: Catalyst 3200 Switch Rear View

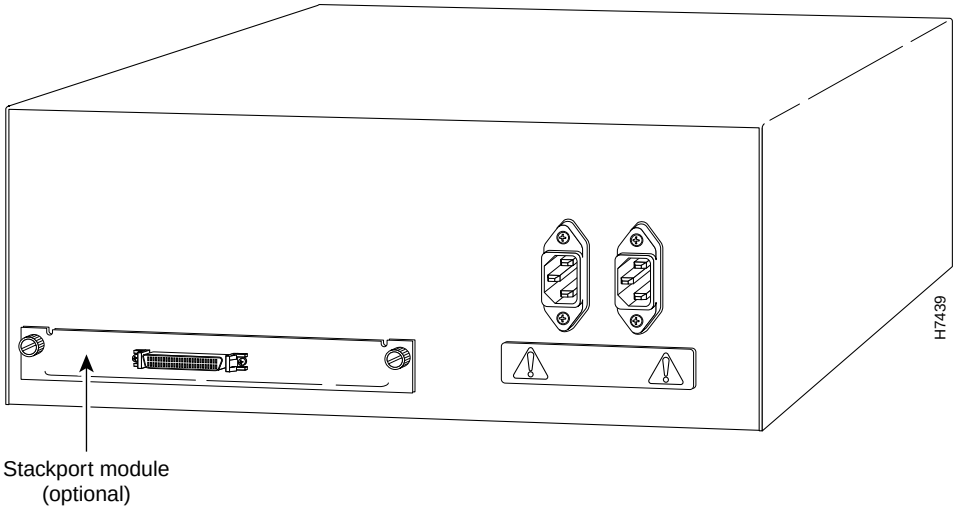


Figure 6-17: Catalyst Matrix Front View

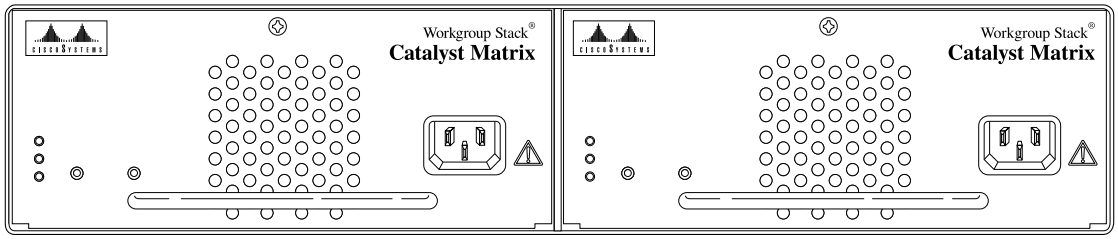


Figure 6-18: Catalyst Matrix Rear View

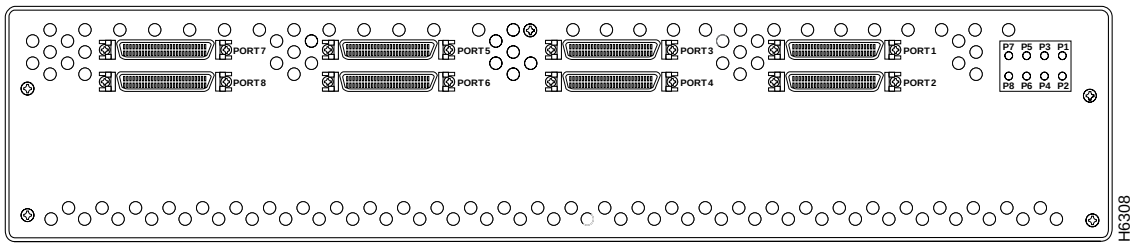
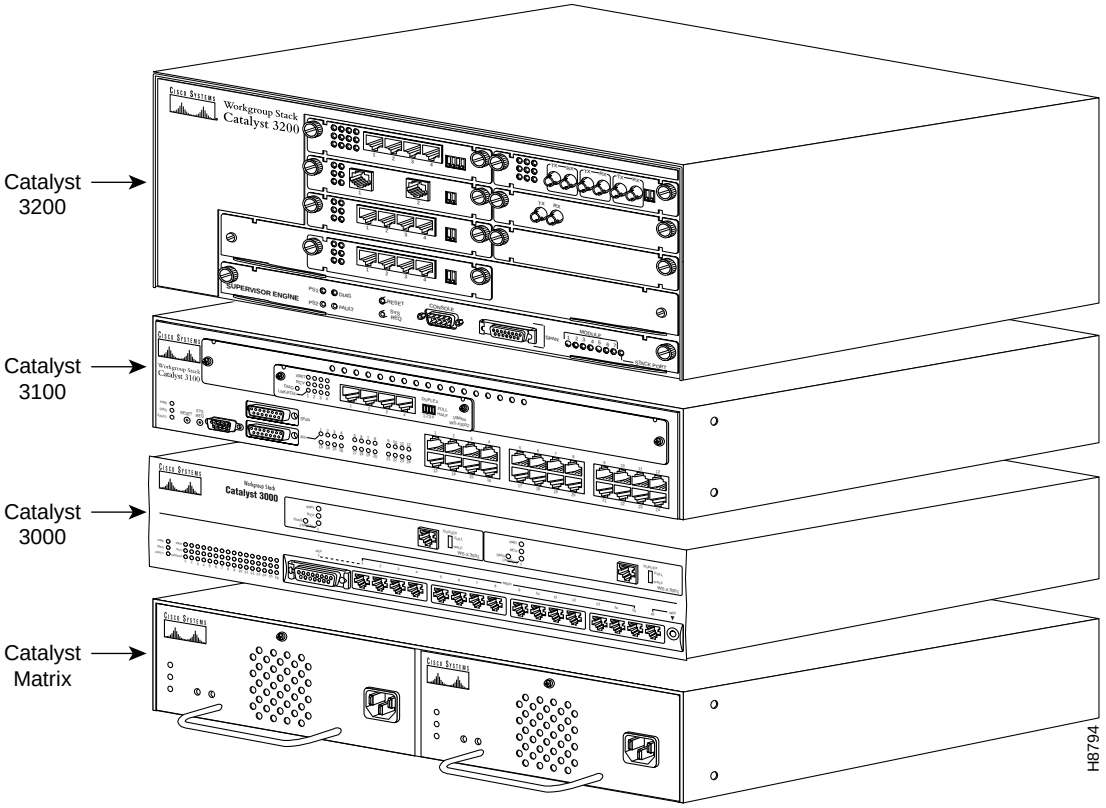


Figure 6-19: Catalyst 3000 Series Stack Front Views



Key Features and Benefits

The Catalyst 3000 series switches support 16 10BaseT ports that can be individually configured for full-duplex Ethernet (with the enhanced software option), plus two slots for expansion modules.

The FlexSlot in the Catalyst 3100 and Catalyst 3200 can be used with any one of the Catalyst 3000 expansion modules or a 3011 WAN/router module (which can be used to connect an individual switch or an entire stack to the WAN). Future router modules will provide Layer 3 routing functionality for an individual switch or an entire stack.

The Catalyst 3100 provides 24 dedicated 10BaseT ports plus one FlexSlot.

The Catalyst 3200 has seven media expansion slots including one FlexSlot. The Catalyst 3200 also has built-in dual power supplies to provide fault-tolerant connectivity.

Two Catalyst 3000, Catalyst 3100, or Catalyst 3200 switches can be connected together by installing the optional Stack Port module in the rear panel. Using the Catalyst Matrix, you can interconnect up to eight Catalyst 3000, Catalyst 3100, or Catalyst 3200 switches in any combination.

The Catalyst 3000 series provides the following features:

- Powerful software featuring plug-and-play expansion of switching capacity. Stacked switch platforms interact and are manageable as if they were a single logical entity. The switches automatically reconfigure themselves as new switches are added or removed.
- Adaptive cut-through switching technology that delivers wire-speed, low-latency switching. In addition, the Catalyst 3000 series has the ability to automatically switch between cut-through and store-and-forward technologies depending on the error rate of a network at any given time.
- Optional modules that provide additional interfaces for additional Ethernet, Fast Ethernet, VG, ATM, or WAN connectivity. These user-installable options provide flexibility for changing or growing switching applications.
- Extensive packet buffering and address filtering database supporting 192 KB of per-port buffering for Ethernet and up to 10,000 end-user stations connected to the switch. This ensures reliable delivery of network traffic in switched desktop and hub applications.
- User-definable per-port and secure-mode filtering that provides access control for sensitive information resources.
- Support for up to 64 VLANs using Cisco's LANE-based ATM, and ISL-based Fast Ethernet VLANs to extend switched VLANs throughout the enterprise.
- Optional RMON traffic management providing four groups of RMON that can be utilized through Cisco's TrafficDirector application.
- IEEE 802.1d spanning-tree bridging per VLAN for loop detection and support of fault-tolerant switching applications.
- Optional Stack Port interface module that connects the switch to another Catalyst 3000, Catalyst 3100, or Catalyst 3200 switch, or to the Catalyst Matrix. Delivers 280 Mbps per switch of bandwidth ensuring unrestricted traffic flow.
- Redundant option: The standard matrix chassis supports one crosspoint matrix module, with a bay, to add a second redundant module. Each module is a self-contained unit with complete logic and power supply. In the redundant configuration, if the primary module fails, the secondary module detects the failure and resumes operation immediately.

Specifications

Hardware

Table 6-11: Catalyst 3000 Series Specifications

Characteristic	Description
Ports	Catalyst 3000: 16 10BaseT, RJ-45 (ports 1–15 always MDI-X; port 16 can be MDI or MDI-X) 1 AUI 2 expansion slots 1 EIA/TIA-232 console 1 AUI DB15 SPAN port 1 Stack port slot (rear) Catalyst 3100: 24 10BaseT, RJ-45 ports 1 FlexSlot 1 EIA/TIA-232 console 1 AUI DB15 SPAN port 1 Stack port slot (rear) Catalyst 3200: 7 expansion slots including 1 FlexSlot for a double-wide module 1 EIA/TIA-232 console 1 AUI DB/5 SPAN port 1 Stack port slot (rear) Stack port module (optional) 1 SCSI-2 Catalyst Matrix: 8 SCSI-2 ports for connecting the Catalyst 3000, Catalyst 3100, and Catalyst 3200 to the Matrix
Controls	Catalyst 3000: MDI/MDI-X pushbutton (for port 16) Catalyst 3100: Reset, system request Catalyst 3200: 2 power supply LEDs Diagnostic LED Fault LED Stack port Expansion module power LEDs Catalyst Matrix: Switch ID pushbutton Activate pushbutton Duplex DIP switches (for ports 1–8) Expansion module (optional): Duplex slide switch

Characteristic	Description
Front panel indicators	Catalyst 3000/3100/3200: Each port: transmit, receive, link/half duplex/full duplex System power Diagnostic Fault Catalyst Matrix: Ready Power Unit active Expansion modules: XMIT receive link Varies with module type
Rear panel indicators	Catalyst 3000, Catalyst 3100, and Catalyst 3200 switches: Reset System request Stack Port module: Ready Power Active Catalyst Matrix: Link (port 1 to port 8)
Mounting	19-inch rack-mount
Expansion modules	1-port 100BaseTX 2-port 100BaseTX with ISL 3-port 10BaseFL 1-port 100BaseFX 2-port 100BaseFX with ISL 4-port 10BaseT 2-port 100VG fiber 2-port 100VG UTP 3-port 10Base2 1-port ATM MM fiber 1-port ATM SM fiber WAN module (Catalyst 3100 and Catalyst 3200 only)
Buffers	192 KB per 10-Mbps port 256 KB per 100-Mbps port
Addresses	1700 addresses per port, 6000 per system 10,000 addresses per system (optional on Catalyst 3000, standard on Catalyst 3100 and Catalyst 3200)
Software updates	Flash PROM
Protocol compatibility	Transparent to higher-level protocols
Network management	SNMP MIB II, bridge MIB, optional RMON (4 groups), VTP MIB
Dimensions (H x W x D)	Catalyst 3000 switch: 3.5 x 17 x 13.4 in. (8.9 x 43 x 34 cm) Catalyst 3100 switch: 3.5 x 17 x 16.8 in. (8.9 x 43 x 42.7 cm) Catalyst 3200 switch: 6 x 17.25 x 13.75 in. (15 x 43 x 34 cm) Catalyst Matrix: 3.5 x 17 x 13.4 in. (8.75 x 43 x 34 cm)
Weight	Catalyst 3000 switch: 17 lb (7.7 kg) Catalyst 3100 switch: 19 lb (8.6 kg) Catalyst 3200 switch: 32 lb (14.5 kg) Catalyst Matrix: 14 lb (6.35 kg)
Safety	UL1950, EN 60950, CSA-C22.2 No 950-93

Table 6-12: Catalyst 3000 Environmental Specifications

Description	Specification
Input	90 to 264 VAC[1] autoranging
Frequency	47 to 63 Hz
AC current rating	Catalyst 3000: 1.5A @ 120V; 0.75A @ 220V Catalyst 3100: 2A @ 120V; 1A @ 220V Catalyst 3200: 4A @ 120V; 2A @ 220V Catalyst Matrix: 1.0A @ 120V; 0.5A @ 220V
Operating temperature range	32 to 104F (0 to 40C)
Storage temperature	–25 to 75C
Operating humidity	8 to 80% noncondensing
Storage altitude	40,000 ft
Regulatory approvals	FCC Class A (CFR47, Part 15), EN55022 B, VCCI Class 2, CE Mark

1. VAC = volts alternating current.

This section describes the FlexSlot modules and lists the interchangeable expansion modules for the Catalyst 3000 series switches.

FlexSlot Modules

The Catalyst 3100 and Catalyst 3200 double-wide FlexSlot can be used in conjunction with the 3011 WAN access module to provide a Catalyst 3100 or Catalyst 3200 WAN connectivity, or an entire stack can be connected to the WAN. The 3011 is based on the Cisco 2503 router, which provides two serial ports, an ISDN BRI port, and an auxiliary (AUX) port. The same software images available for the Cisco 2500 series (Release 11.1(6) and higher) are used for the 3011 and are extended to the Catalyst 3000 family.

The two serial ports operate in either DCE or DTE mode at speeds up to 2.048 Mbps. These ports can be configured to operate in either synchronous or asynchronous mode. This provides support for both dedicated leased lines and dial-up lines. The serial port connectors have a universal design common to the Cisco 2500 series and Cisco 7000 FSIP card. This feature enables easy transition to any of the common physical interfaces, including V.35, EIA/TIA-232, EIA/TIA-449, EIA/TIA-530, and X.21.

In addition to the two serial interfaces, the AUX port can be configured to provide a second dial-up line for asynchronous routing. The ISDN BRI removes the requirement for an external ISDN terminal adapter. The BRI S/T interface provides two 64-kbps B channels and one 16-kbps D channel for ISDN signaling for user data access to the ISDN network.

The 3011 WAN module provides no external Ethernet or AUI ports. Packets are routed on the 3011 WAN module through the Catalyst 3100 or Catalyst 3200 AXIS bus. Each 3011 provides WAN connectivity to any one VLAN or network segment within a Catalyst 3000 family stacked system.

Expansion Modules

The Catalyst 3000 series switches support any mixture of the following modules:

- 1-port 100BaseTX
- 2-port 100BaseTX with ISL
- 1-port 100BaseFX
- 2-port 100BaseFX with ISL

- 3-port 10BaseFL
- 4-port 10BaseT
- 3-port 10Base2 (thin net)
- 2-port 100VG fiber
- 2-port 100VG UTP
- 1-port ATM multimode fiber with ST connectors
- 1-port ATM single-mode fiber with ST connectors

Software

For software specification information, access Cisco Connection Online at http://www.cisco.com.

Product Numbers

The Catalyst 3000 series is available in a standard or enhanced version. The standard version includes SNMP, Spanning-Tree Protocol, and address filtering. The enhanced version adds full-duplex Ethernet, EtherChannel, and VLAN support. The Catalyst Matrix is available in the nonredundant version with the option to order a redundant switch module.

The table below lists the Catalyst 3000 series product numbers. If a Cisco product number ends with an equal sign (=), the item can be ordered only as a spare. If a product number does not end with an equal sign, the item can be ordered as a spare or as a configurable part of a system order. When you order a product as a spare, remember to include the equal sign.

Product Numbers

Part Numbers

Description	Part Number
Catalyst 3000 switch with 8-MB memory, enhanced software	WS-C3016B
Catalyst 3100 switch with 8-MB memory, SNMP, address filter, Spanning-Tree Protocol plus VLAN support (ISL ready), full/half duplex	WS-C3100B
Catalyst 3200 switch with 8-MB memory, SNMP, address filter, Spanning-Tree Protocol plus VLAN support (ISL ready), full/half duplex	WS-C3200B
FlexSlot Module	

Description	Part Number
3011 WAN router module, 2 serial ports, ISDN BRI port, and auxiliary port; 4-MB Flash EPROM memory and 2-MB DRAM system memory. Can be configured with any Cisco 2500 software upgrades. This module is a double-wide module used in conjunction with the Catalyst 3100 and Catalyst 3200 FlexSlot (spare only).	WS-X3011=
3011 WAN router module, 2 serial ports, ISDN BRI port, and auxiliary port; 4-MB Flash EPROM and 2-MB DRAM for Catalyst 3100 and Catalyst 3200 FlexSlot (reseller channel)	WS-X3011-CH
Catalyst Matrix	
Catalyst Matrix, nonredundant configuration	WS-C3020
Catalyst Matrix, redundant module	WS-X3021
Expansion Modules and Stack Port Module	
1-port 100BaseTX interface module, RJ-45 connector, UTP	WS-X3001
4-port 10BaseT interface module, RJ-45 connector, UTP	WS-X3002
3-port 10BaseFL interface module, ST connector, MM fiber	WS-X3003
Catalyst 3000/3100/3200 Stack Port module	WS-X3004
1-port 100BaseFX interface module, ST connector, MM fiber	WS-X3005
1-port ATM interface, SC connector, MM fiber	WS-X3006A
1-port ATM interface, SC connector, SM fiber (spare only)	WS-X3006B=

Description	Part Number
2-port 100VG-AnyLAN interface, ST connector, MM fiber	WS-X3007
2-port 100VG-AnyLAN interface, RJ-45 connector, UTP	WS-X3008
2-port 100BaseFX interface module with ISL, SC connector, MM fiber	WS-X3009
2-port 100BaseTX interface module with ISL, RJ-45 connector, UTP	S-X301WS-X3010
3-port 10Base2 interface module	WS-X3013
Memory	
Upgrade memory from 4 MB to 8 MB for WS-X3016 and WS-X3016A (field installable)	WS-X3428
Software	
Catalyst 3000 Family Software, Release 2.2	WS-SW-C3X00-2.2
Catalyst 3000 Family Software, Release 2.1	WS-SW-C3X00-2.1
Catalyst 3000 Family Software, Release 2.0	WS-SW-3X00
Upgrade from unenhanced to enhanced software (enables enhanced software services: VLAN/ISL support, full duplex, EtherChannel)	WS-C3017
RMON license for Catalyst 3200	WS-C3200-EMS-LIC
RMON license for Catalyst 3100	WS-C3100-EMS-LIC
RMON license for Catalyst 3000	WS-C3000-EMS-LIC
Service and Documentation	
SMARTnet	See the “Service and Support” chapter.
Documentation	See the “Documentation” chapter.